

REMARKS

In the Office Action of November 26, 2007, claims 1-3 and 10 were rejected under 35 USC 102(b) as being anticipated by Biensan et al. (US Patent No. 6,071,645). The examiner is of opinion that Biensan et al. and the present application utilize the same electrode active material comprising the same elements, and therefore the properties recited in claim 1, such as X-ray diffraction data, are inherent.

In response to the rejection under 35 USC 102(b), claims 1 and 10 have been amended to further add limitations. Namely, it is now recited that the electrode material is $\text{Li}_a\text{Co}_b\text{A}_c\text{B}_d\text{O}_e\text{F}_f$, wherein A is magnesium, B is zirconium, $0.90 \leq a \leq 1.10$, $0.97 \leq b \leq 1.00$, $0.0001 \leq c \leq 0.03$, $0.0001 \leq d \leq 0.03$, $1.98 \leq e \leq 2.02$, $0 \leq f \leq 0.02$, and $0.002 \leq c + d \leq 0.02$. Namely, the range of (c + d) is between 0.002 and 0.02, which is disclosed on page 3, lines 26-27 of the original specification.

On the other hand, in Biensan, the range of (z + m) corresponds to (c + d) in claim 1 of the present application. It is apparent that Biensan can only anticipate $0.05 \leq z + m \leq 0.2$. Biensan does not expressly or inherently teach $0.002 \leq c + d \leq 0.02$ as now recited in claims 1 and 10 in the present application.

In view of the rejections, the Declaration under Rule 132 has been filed to show evidence of probative value including evidence of unexpected results.

For the purpose of the comparison between the present application and Biensan et al., a composition, $\text{LiCo}_{0.90}\text{Mg}_{0.05}\text{Zr}_{0.05}\text{O}_2$, was used as a representative composition for a composition disclosed in Biensan et al. and fired at 750 C°, and a composition, $\text{LiCo}_{0.98}\text{Mg}_{0.01}\text{Zr}_{0.01}\text{O}_2$, was used as a representative composition for the present application and was fired at 850 C°.

In the experiments, the X-ray diffraction spectrum of the fired composition was obtained by a high-sensitivity X-ray diffractometry to analyze a diffraction peak at $2\theta\ 28\pm 1^\circ$ of the positive electrode material obtained in Experiments 1 to 4. In addition, data of a heat treatment temperature, and a general standard for a battery property including early discharge capacity and early efficiency of the positive electrode materials obtained from Experiments 1 to 4 were obtained. The early discharge capacity is calculated by dividing the discharge capacity by the charge capacity, and it is known that it would be ideal for the early discharge capacity to be as close as 100%.

As shown in the table in the Declaration, it is shown that the positive electrode material in the present application does not have any diffraction peaks at $2\theta\ 28\pm 1^\circ$; and had a high discharge capacity and an excellent battery property, and, on the other hand, the positive electrode material in Biensan et al. has a diffraction peak at $2\theta\ 28\pm 1^\circ$; a low discharge capacity; and a poor battery property.

In claims 1 and 10, it is specified that no diffraction peaks are observed at 2θ of $28\pm 1^\circ$ in a high-sensitivity X-ray diffraction spectrum using Cu-K α ray. In this respect, it is clear that the material of the positive electrode is different from that of Biensan et al.

As explained above, claims 1 and 10 are not anticipated by Biensan et al.

Rejections on claims 2-3 are obviated because those dependent claims further add limitations to claim 1.

In the Action, claims 8 was rejected under 35 U.S.C. 103(a) as being unpatentable over Biensan et al. in view of Naruoka et al. (US Pub No. 2002/0086210 A1), and claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over Biensan et al. in view of Naruoka et al.

In the Action, it was indicated that Biensan et al. taught that the heat treatment is preferably carried out at a temperature in the range of 600 C° to 750 C° for a period in the range of 2 hours to 20 hours, and it would have been within one of ordinary skill in the art to adjust the heat treatment temperature of Biensan et al. to be within applicant's claimed heat treatment range since there is no showing of unexpected results or showing of criticality of the heat treatment range as claimed by the applicant in contrast to the heat treatment range disclosed by Biensan et al.

In response to the rejections under 35 U.S.C. 103(a), claim 9 has been amended to further add limitations to c+d, and the Declaration under Rule 132, as explained before, has been filed to show evidence of probative value including evidence of unexpected results.

As explained above, as shown in the table in the Declaration, it is shown that the positive electrode material in the present application does not have any diffraction peaks at $2\theta\ 28\pm 1^\circ$; and had a high discharge capacity and an excellent battery property, while the positive electrode material in Biensan et al. has a diffraction peak at $2\theta\ 28\pm 1^\circ$; a low discharge capacity; and a poor battery property.

Therefore, it is shown that since there is, now, showing of unexpected results or showing of criticality of the heat treatment range as claimed by the applicant in contrast to the heat treatment range disclosed by Biensan et al., it cannot be said that it would have been within one of ordinary skill in the art to adjust the heat treatment temperature of Biensan et al. Also, it can be said that even combination of Biensan and Naruoka cannot make the present application obvious to one of ordinary skill in the art.

Naruoka et al. cited in the Action shows the particle size of the electrode material, but does not rectify the structure of Biensan et al.

On the grounds stated above, the rejection under 35 U.S.C. 103(a) as being unpatentable over Biensan et al. in view of Naruoka are now obviated.

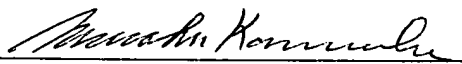
As to the rejection under 35 U.S.C. 103(a) over claim 8, since claim 8 depends from claim 1 and further add limitation to the scope of claim 1, and even combination of Biensan et al. and Naruoka cannot expressly or inherently teach the range of $0.002 \leq Z+m \leq 0.02$ as recited in claim 1 of the present application, the rejection under 35 U.S.C. 103(a) over claim 8 is obviated.

As explained above, claims pending in the application are patentable over the cited references.

Reconsideration and allowance are earnestly solicited.

One month extension of time is hereby requested. A credit card authorization form in the amount of \$120.00 is attached herewith for filing a response to the Office Action.

Respectfully Submitted,

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